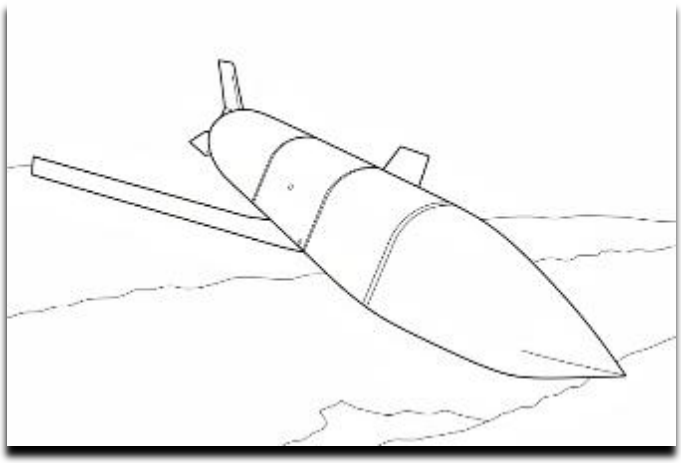
Lockheed Martin AGM-158 JASSM / AGM-158B JASSM-ER



IDENTITY & DESIGNATION

Official Designation: AGM-158A Joint Air-to-Surface Standoff Missile (JASSM); AGM-158B JASSM Extended Range (JASSM-ER); JASSM-XR (extended range variant in development 2025)

Manufacturer: Lockheed Martin Missiles and Fire Control, Orlando, Florida, USA

Country of Origin: United States

Year Introduced: AGM-158A: low-rate production began December 2001; full-rate production 2009. AGM-158B JASSM-ER: formally designated 2002; in production and service with USAF and allied forces

NATO Stock Number / Designation: AGM-158A / AGM-158B

Nickname: JASSM (pronounced 'Jazz-em')

Program Status: Active production; JASSM-ER currently the primary procurement variant. JASSM-XR (further extended range) in development. Combined JASSM/LRASM production target: 1,000+ missiles/year by 2025

CLASSIFICATION

Domain: Air

Category: Military / Standoff Precision Strike

Sub-Category: Stealthy air-launched cruise missile — long-range, conventional precision strike against hard and deeply buried targets

Terminal Mode: Expendable — one-way attack, no recovery

Expendable: Yes

Size Class: Medium standoff cruise missile

THE BENCHMARK — WHY THIS CARD EXISTS

The JASSM family is the gold standard that every platform in this chapter's affordable-mass section is explicitly measured against. When Lockheed Martin prices its own CMMT at $150,000 and positions it as the low-end complement to JASSM-ER, the price difference is the entire argument: JASSM-ER costs approximately $1.3-1.5 million per round. The CMMT costs $150,000. The affordable-mass movement is not a different kind of weapon — it is the same basic concept (subsonic, GPS/INS guided, air-launched cruise missile) produced with a different philosophy about cost, volume, and what level of performance is 'good enough' to accomplish the mission.

JASSM-ER belongs in this book not because it is a drone or converging toward drone technology — it is emphatically not. It belongs because it defines the upper boundary of the cost spectrum, and everything below it on that spectrum is the story of what happens when the drone industry's production philosophy is applied to the cruise missile mission. Understanding JASSM-ER is understanding what the affordable-mass movement is reacting against.

> **PETER NOTE:** *I spent a career building cruise missiles. The Tomahawk, the Advanced Cruise Missile, derivatives of both. The JASSM is the generation that came after my time at the leading edge, and it represents what the traditional cruise missile program looked like when cost was a secondary concern behind performance: classified-number production runs, multi-year development cycles, $1.5M unit costs even after decades of production learning. It is an exquisite weapon. It has earned that reputation in combat. And it is precisely because it is so exquisite and so expensive that the entire CMMT/Barracuda/Ragnarok*

ecosystem now exists. You cannot afford to fight a peer adversary at $1.5M per shot across the kind of magazine depth a Taiwan Strait scenario would require. The affordable-mass movement is not an attack on JASSM — it is an acknowledgment that JASSM alone is not enough.

PHYSICAL SPECIFICATIONS — AGM-158A

Length: 4.27 meters (14 ft)

Body Diameter: 0.55 meters (1.8 ft)

Wingspan: 2.7 meters (8.9 ft) deployed; wings fold for carriage

Launch Weight: ~1,000 kg (2,250 lb)

Warhead: WDU-42/B penetrating blast-fragmentation warhead, 450 kg (1,000 lb) — designed to penetrate hardened and deeply buried targets before detonation

Fuze: FMU-156/B programmable fuze — selectable delay for optimized penetration depth

PHYSICAL SPECIFICATIONS — AGM-158B JASSM-ER

External Dimensions: Identical to AGM-158A — same airframe, same carriage envelope, same pylon compatibility

Differences from AGM-158A: More fuel-efficient Williams International F107-WR-105 turbofan engine; larger internal fuel volume; no change to external dimensions or warhead. Same weapon interface, different internals.

Launch Weight: ~1,000 kg (same class as AGM-158A)

Warhead: WDU-42/B — same warhead as AGM-158A

PROPULSION & PERFORMANCE

AGM-158A Propulsion: Teledyne CAE J402-CA-100 turbojet

AGM-158A Range: ~370 km (230 miles / 200 nm) — standoff range exceeds most tactical surface-to-air missile systems

AGM-158B Propulsion: Williams International F107-WR-105 turbofan — same engine family as AGM-86 ALCM, providing superior fuel efficiency

AGM-158B Range: 925+ km (575+ miles / 500+ nm) — more than double the range of AGM-158A from the same external airframe

Speed: High subsonic — approximately Mach 0.9; precise speed classified

Altitude: Low-level terrain-following to high-altitude cruise; mission profile classified

Accuracy: ~3 meter Circular Error Probable (CEP) — GPS/INS guided with IIR terminal seeker

GUIDANCE, NAVIGATION & CONTROL

Primary Guidance: GPS-aided Inertial Navigation System (INS) — anti-jam capable

Terminal Guidance: Infrared Imaging Seeker (IIR) — autonomous scene matching at terminal phase; does not require active radar emission that could be detected

Signature Reduction: Low-observable (stealthy) airframe — faceted surfaces, RAM coating, no major radar-reflective protrusions. Designed to penetrate integrated air defense systems (IADS)

Mission Planning: Pre-mission programmed flight path with up to multiple waypoints; no in-flight command uplink required (fire-and-forget)

Autonomy: Full fire-and-forget autonomous operation after launch — does not require datalink or operator input during flight

Jam Resistance: GPS anti-jam filtering; INS provides backup if GPS denied; IIR terminal seeker is passive (cannot be jammed by conventional means)

LAUNCH PLATFORMS

USAF Fixed-Wing: B-1B Lancer (24 external + internal); B-2 Spirit; B-52 Stratofortress; F-15E Strike Eagle; F-15EX Eagle II; F-16C/D Fighting Falcon; F-35A Lightning II

US Navy / USMC: F/A-18E/F Super Hornet; F-35B/C Lightning II (integration ongoing)

Allied Operators: Australia (F/A-18F); Poland (F-16); Finland; Netherlands; Qatar; South Korea [VERIFY current customer list]; additional FMS customers ongoing

Palletized Launch: Rapid Dragon system — AGM-158B launched from C-130 Hercules / C-17 Globemaster III cargo aircraft via palletized munition deployment; demonstrated in live-fire tests

Surface Launch: Not standard; AGM-158C LRASM variant can be Mk.41 VLS launched — see LRASM data card

COST & PRODUCTION

AGM-158A Unit Cost: Approximately $850,000-$1.1 million per round depending on production lot and configuration

AGM-158B Unit Cost: Approximately $1.3-1.5 million per round — the widely cited benchmark figure in all affordable-mass program comparisons

Production Rate: Combined JASSM/LRASM production capacity approximately 500+ missiles/year as of 2023; target 1,000+/year by 2025

Total Procurement: USAF has procured thousands of JASSM/JASSM-ER rounds over the program's life; exact figures classified

Italy FMS: December 2025: US State Department approved sale of 100 AGM-158B/B2 JASSM-ER to Italy for ~$301M (~$3M/round for full package including support)

COUNTERMEASURE VULNERABILITY PROFILE

Radar Detection: LOW — low-observable airframe with RAM coating significantly reduces radar cross-section; designed to evade legacy and most modern IADS

RF Jamming: LOW — GPS anti-jam; INS backup; IIR terminal seeker is passive and unjammable by conventional means

Kinetic Intercept: LOW-MODERATE — low-altitude terrain-following profile, stealthy airframe, and high subsonic speed make intercept difficult for most SHORAD; modern systems (S-400, Patriot PAC-3) can engage but require prior cueing

Electronic Countermeasures: LOW — passive terminal seeker has no radar emission to jam or home-on; GPS resistance designed in

Overall Vulnerability Rating: LOW — purpose-designed for penetration of sophisticated IADS; the benchmark for survivability in contested airspace

COMBAT HISTORY

April 2018: US, UK, and French forces used JASSM (alongside Tomahawk and Storm Shadow/SCALP) in Operation Inherent Resolve strikes against Syrian chemical weapons facilities — three targets including the Barzah Research and Development Center. First confirmed combat use of JASSM-ER against hardened targets. Results confirmed precision penetration of reinforced concrete structures.

2025: JASSM/JASSM-ER used in multiple classified operations. Italy approved for JASSM-ER purchase December 2025 for F-35 integration. JASSM-XR (further extended range derivative) in active development for USAF.

CRUISE MISSILE CONVERGENCE NOTES

The JASSM family sits at the top of the cruise missile cost-performance spectrum — the end point that the convergence thesis is measured against. Every platform in the affordable-mass tier (CMMT at $150K, Barracuda-500 at $200K, Ragnarok at $150K) is explicitly positioned relative to JASSM-ER's $1.5M price point.

The convergence thesis runs differently for JASSM than for the platforms discussed elsewhere in this book. JASSM is not converging toward drone technology — it is the traditional cruise missile that drone production philosophy is attempting to replicate at one-tenth the cost. The question the affordable-mass movement asks is not 'how do we make JASSM cheaper?' but 'how much of JASSM's performance is actually necessary for the missions it would fly in a high-volume conflict, and what can we produce at $150K that is good enough for those missions?' The answer to that question is what CMMT, Barracuda-500, and Ragnarok represent.

Lockheed Martin's own decision to develop CMMT — while continuing to sell JASSM-ER — is the clearest possible signal that the traditional cruise missile establishment has accepted the affordable-mass argument. They are not conceding JASSM's niche; they are expanding the market to include the high-volume, cost-exchange-favorable tier below it. The cruise missile guys are becoming the drone guys, from the top of the market down.

SOURCES & CROSS-REFERENCES

Manufacturer: https://www.lockheedmartin.com/en-us/products/jassm.html

USAF Fact Sheet: https://www.af.mil/About-Us/Fact-Sheets/Display/Article/104560/agm-158b-joint-air-to-surface-standoff-missile-extended-range-jassm-er/

Key Reference: Wikipedia AGM-158 JASSM — comprehensive variant list and combat history

Cross-Ref: AGM-158C LRASM (anti-ship derivative, same airframe); CMMT (Lockheed Martin low-cost complement); Barracuda-500M (Anduril competitor); Ragnarok (Kratos low-cost alternative); Tomahawk BGM-109 (predecessor cruise missile family, Peter Brusso engineering lineage)